

Subject card

Subject name and code	Monographic lecture - Introduction into photochemistry, PG_00082381						
Field of study	Chemistry						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Faculty of Chemistry Office -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Janusz Rak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		5.0		40.0	75
Subject objectives	Familiarizing students with the basic concepts and laws of photochemistry; developing the ability to describe photochemical processes and reactions and assess their potential practical applications.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[CHEMMU2_W01] Uses knowledge of spectroscopic methods of chemical compound analysis.		Has general knowledge of the fundamental concepts, principles, and theories operating in photochemistry.		[SW4] test/exam - oral or written		
	[CHEMMU2_K01] Knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so.		Exercises caution and criticism when expressing opinions.		[SK4] test/exam - oral or written		
	[CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.		Explains and describes the processes of radiative and nonradiative deactivation of the excited state, characterizes the processes of electron and energy transfer in excited states, and identifies the basic types of photochemical reactions.		[SW4] test/exam - oral or written		
	[CHEMMU2_W11] Demonstrates general knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field.		Possesses knowledge about the directions of development and applications of photophysics and photochemistry.		[SW4] test/exam - oral or written		
Subject contents	The interaction of electromagnetic radiation with matter, fundamental concepts and laws of photochemistry, excited states of molecules, the Jablonski diagram, radiative and non-radiative deactivation processes of the excited state, solvent effects, non-radiative intermolecular energy transfer, kinetics of photochemical reactions, basic types of photochemical reactions, photochemistry of nucleic acids and proteins, the process of vision, photosynthesis, apparatus and methods of photochemical research.						

Prerequisites and co-requisites	Physical chemistry at the undergraduate level, spectrochemistry, and the ability to describe a chemical reaction in terms of thermodynamics and kinetics, knowledge of the basics of molecular spectroscopy.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	51.0%	100.0%
Recommended reading	Basic literature	1. S. Paszyc, Podstawy fotochemii, PWN, Warszawa, 1981. 2. J. P. Simons, Fotochemia i spektroskopia, PWN, Warszawa, 1976. 3. J. A. Barltrop, J. D. Coyle, Fotochemia. Podstawy, PWN, Warszawa, 1987 4. P. Suppan, Chemia i Światło, PWN, Warszawa, 1997	
	Supplementary literature	1. K. Pigoń, Z. Ruziewicz, Chemia Fizyczna. Fizykochemia molekularna, PWN, Warszawa, 2005	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. The importance of photochemical reactions. 2. Molecular factors affecting the probability of electronic transitions. 3. Basic photochemical laws. 4. Jablonski diagram. 5. Mechanisms of excited state quenching.		
Work placement	Not applicable		

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